

SPECIFICATION

TITLE OF INVENTION

Inventors Thomas Norton Koerble and John M. Haegler Koerble citizens of the United States of America residents of 2043 Creedy Road Beliot, WI 53511 and 2065 Greenwood Drive Owatonna, MN 55060 respectively; hereby present the Hand Held Saw Mill, work piece carrier device.

CROSS-REFERENCE TO RELATED APPLICATIONS

Not Applicable

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not Applicable

REFERENCE TO MICROFICHE APPENDIX

Not Applicable

BACKGROUND OF THE INVENTION

Classification 83 (Cutting) and 144 (Woodworking) Paraphrase of description.

The bulk of the relevant prior art was found in U.S. Patent Classifications 83 (Cutting) and 144 (Woodworking). In class 83, the following subclasses were checked: 13, 104, 155, 156, 249, 277, 289, 397, 420, 421, 425, 435, 468.7, 471, 574, 703, 713, 719, 732, 745, 788, 794, 797, 801, 865. In class 144, the following subclasses were checked: 134, 253, 253.2, 287, 289, 312, 370, 371, and 378. For convenience in considering the prior art developed during the search, I have segregated it into the following groups:

A. Band Saws :

1. Saw fixed, work piece movable.
2. Saw movable, work piece fixed.

B. Chain saws with the work piece fixed

C. Circular saw:

1. Saw fixed, work piece movable.
2. Saw movable, work piece fixed.

D. Manual movement of miter, fence, tool, or work piece on a saw table for the controlled cutting of wood.

For your reference, the following patents were developed during the search:

Group Patent Numbers

A1 4702137, 4732184, 4805500

A2 4289180, 4332084, 4519283, 4559858, 4579026, 4841639,
5203247, 5213022, 5819613, 587644

B 4070757, 4235140, 4300428, 4307641, (5784941) ←

C1 4015648, 5813302, 5722474, 5664611, 3934630, 5762121

C2 5441092, 5568756

D 1651846, 4026173, 4155283, 4165668, 4206672, 4206910,
4259887, 4367668, 4481846, 4655445, 4658686, 4699346,
4677887, 4693156, 4732182, 4741387, 4909111,
5016358, 5016508, 5038486, 5109742, 5190271, 5301726,
5443554, 5662019, 5664612, 5823239

None of the prior art fully anticipated the proposed workpiece carrier device. However, as further mentioned below, several of the patents are of interest with respect to certain structural details and features of the device.

The patents in group A1 and A2 use band saws on large scales in different configurations, but they do not appear to suggest:

- use of a home or shop type band saw having a flat work table with guide slot (the prior art shows complex heavy duty equipment for large scale production) ,

- use of a workpiece carrier device which is slidable on a flat work table, the carrier having a guide bar which is guided by a guide slot in the work table (the prior art guidance is provided by rollers and other means) ,
- provision of a carrier device of a transversely movable mounting assembly to which a workpiece is attached by screws, clamps and like fasteners (the prior art teaches the use of various vice arrangements to clamp the workpiece) ,
- a carrier device designed for manual movement into the cutting saw (the prior art shows various complex arrangements by which the workpiece is moved automatically into cutting engagement with the saw) .
- none of these patents provides a solution for the problem of how one individual can cut materials in a precisely predictable manner.

The patents in group B are directed to saw mills which use chain saws as the cutting medium and in which the saw is movable with respect to the log or other fixed workpiece. Again, the structural features of these patents do not allow for the cutting of small size stock with structural and functional features which allow for one man operation, as with of the proposed workpiece carrier device. Thus the B group patents are only of general interest.

The patents in the C1 and C2 groups are of some interest in showing art as it relates to heavy duty saw mill equipment utilizing rotary saw bladed. However, as will be noted from a perusal of these patents, they are all directed to large scale equipment involving clamps and vices to hold the workpiece in cutting position, and appear to lack structure that is similar to that of the proposed workpiece carrier device.

Finally, in group D, the patents are primarily aimed at miters, fences tools, workpiece clamps, and the like as usable with home or shop type saws. In a number of these patents, the work table of the saw is shown as having a guide groove with the miter, tool, or workpiece holder being guided in that groove. Beyond this feature of guidance from a groove in the work table of the saw, the patents do not appear to show or suggest the combination of structure and/or features which allow for the precise and predictable cutting of objects moving against a stationary cutting device, as shown in of the proposed workpiece carrier device.

BRIEF SUMMARY OF THE INVENTION

The proposed work piece carrier device is intended for use with bands saws and circular saws of the type commonly found in home workshops and commercial manufacturing firms. When employed with a band saw of this type, the proposed workpiece carrier device is useful in making precision cuts through relatively large (i.e. thick) workpiece; such as a log, a block of steel, a block of plastic, or other materials which have properties that allow cutting by the sawing mechanism. The workpiece carrier device includes means for securely holding a large variety of workpieces, which may be of various shapes and sizes. The workpiece carrier device employs a screw-drive which provides the means for manually adjusting the workpiece thus allowing for an infinite range of thickness of the cut material.

The workpiece carrier device enable a single individual to position, hold and maneuver a workpiece on the working surface of a band saw in a way that allows for precise and predictable cutting. Application for the workpiece carrier device include; sawing logs into board lumber, cutting block metals into nominal sizes, cutting plastics and other soft materials into smaller sizes.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 depicts the component parts and their relationship and placement. Part 1 is the base plate. It provides the overall platform of the device. Part 2 and 3 are side retaining members. Attached to each side of the base plate, these parts allow for the movement of the workpiece slide in a direction toward or away from the sawing mechanism. Part 4 is the control arm. Attached to the top rear portion of the base plate, this stationary part allows the action of the drive screw to move the mounting plate and workpiece slide assemble to toward or away from the sawing mechanism. Part 5 is the miter guide bar. Fastened to the bottom of the base plate, the guide bar fits into the band saw's miter groove allowing the workpiece carrier device to run in a path parallel to the cutting mechanism. Part 6 is the work piece slide and is attached to the mounting plate and handles, and seated between the two side retainers. Parts 6, 7, 8 & 9 comprise the holder assembly. Part 7 is the mounting plate, and is attached to the workpiece slide, handles and the drive screw. The mounting plate has a series of apertures sized to receive devices (i.e. screws, clamps, and vises) which allow for the securing of various work pieces to the mounting plate. Parts 8 and 9 are the handles, these are attached to the mounting plate and the workpiece slide. Parts 10, 11, 12 and 13 comprise the drive-screw assemble, and as a whole are attached to the mounting plate and the control arm. It is the actions of the drive- screw assemble, which allows for the precise and predictable movement of the workpiece in a motion toward or away from the cutting mechanism.

DETAILED DESCRIPTION OF THE INVENTION

The proposed work piece carrier device is intended for use with band saws and circular saws of the type commonly found in home workshops and commercial manufacturing firms. In this type of saw, the upper surface of the work table is normally flat, and includes a guide slot sized to slidably receive the guide bar of a miter, such guide slot extending across the table and running generally parallel with the direction of cut of the saw blade. When employed with a band saw of this type, the proposed carrier device is useful in making precision cuts through relatively large (i.e. thick) workpiece; such as logs, blocks of steel, blocks of plastic, or other materials which have properties that allow for cutting by the sawing mechanism. The work piece carrier device includes means for securely holding a large variety of workpieces, which may be of various shapes and sizes. The work piece carrier device employs a drive-screw assembly which provides the means for manually adjusting the work piece to allow an infinite range of thickness' of the cut material. The carrier device includes a generally rectangular base plate adapted for placement and slidable movement on the work table of the saw. Projecting downward from the base plate is a guide bar sized for slidable engagement limiting movement of the base plate on the work table to a direction parallel with the direction of the cut of the saw.

A holder assembly is positioned on the base plate of the carrier device and is comprised of:

- a work piece slide member that is slidable on the base plate in a direction transversely of the direction of cut of the saw.

- a generally rectangular mounting plate extending upwardly from the work piece slide member,
- two manually accessible handles affixed to and rigidly connecting the workpiece slide and the mounting plate,
- a control arm fixed to the base plate,
- a drive-screw treaded through the control arm and rotatably affixed to the mounting plate, and
- a manually operable locking nut for selectively locking the drive-screw against movement.

The mounting plate has a series of apertures sizes to receive devices (i.e. screws, clamps, and vises) or like fastening devices for releasably attaching to the carrier assembly a workpiece to be cut into boards or sheets.

The holder assembly is movable on the base plate transversely of the direction of cut of the saw. Such movement is controlled by the control arm fixed to the base plate and the drive-screw treaded trough the control arm and rotatably affixed to the mounting plate. Manual rotation of the drive-screw relative to the control arm will cause the holder assembly to move on the base plate transversely of the direction of cut of the saw, with a manually operable locking nut being provided on the drive-screw for engagement with the control arm to releasably secure the holder assembly after it has been moved to the desired position.

In readying the carrier device for use, a work piece such as a log, plank, or stock of plastic or metal is first placed on the work piece slide of the holder assembly and against the mounting plate. The work piece is then affixed to the mounting plate by a plurality of short screws or other fasteners, which extend through certain of the screw apertures provided in the mounting plate. The carrier device plus the attached work piece is next placed on the work table of the saw, with the guide bar of the bottom plate sidably positioned in the guide slot of the work table.

The position of the work piece relative to the saw blade is adjusted by manual rotation of the drive-screw, and the screw is then locked into place with the locking nut. By use of the handles of the holder assembly, the carrier plus the work piece can then be moved manually across the work table in a line parallel with the direction of cut of the saw, being guided by the sliding relationship between the guide bar of the base plate and the guide slot of the work table of the saw. This movement will cut a board or stock of the desired thickness from the outer edge of the work piece. After each cut, it is necessary to return the carrier device and the attached work piece to a location spaced ahead of the saw blade and to re-adjust the position of the holder assembly on the base plate to establish the thickness of the board or stock to be cut.

To avoid any damage to or dulling of the teeth of the band saw blade, the screws or fasteners used to attach the log, plank, plastic or metal stock to the mounting plate preferably should be of a length that they extend into the work piece a distance less than the thickness of the last cut from the work piece.

It should be noted that while the above description relates primarily to use of the carrier device with a band saw or circular saw, the carrier also appears to be capable of use with home or shop type saws, cutting or sanding devices. Thus, the search was not limited to devices having application only to band saws.

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